

(No Model.)

L. M. MAXHAM.
THIRD RAIL.

No. 600,009.

Patented Mar. 1, 1898.

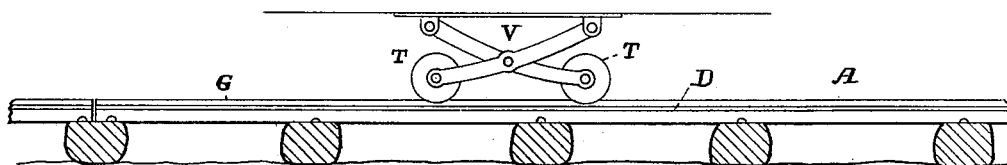


Fig. 1.

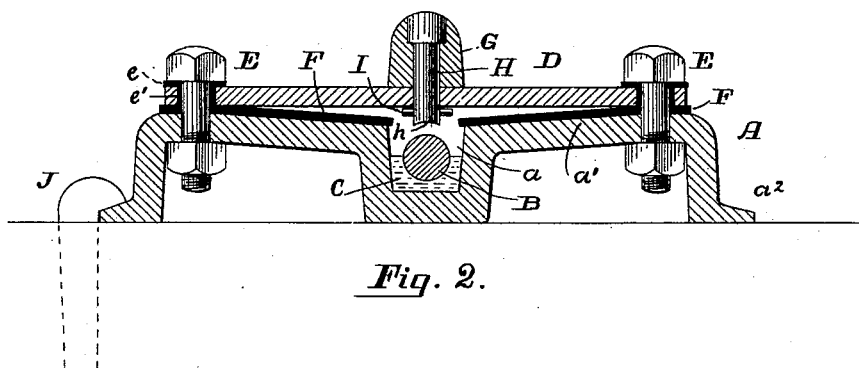


Fig. 2.

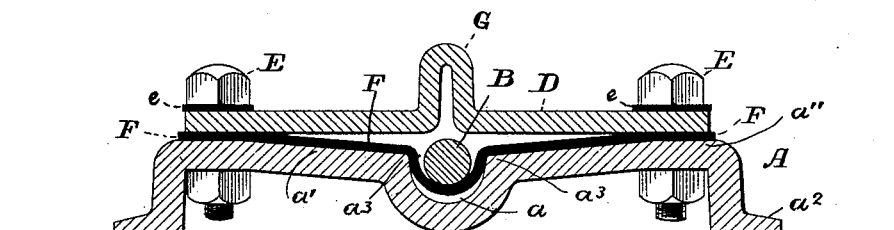


Fig. 3.

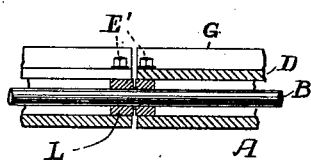


Fig. 4.

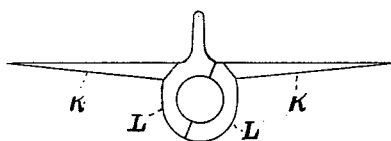


Fig. 6.

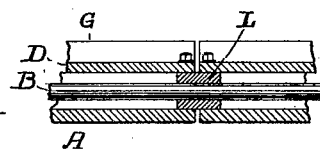


Fig. 5.

Witnesses:

Jeannette Soule
Elmer C. Rideout.

Inventor,

Lowell Mason Maxham,
by A. B. Upham,
Attorney.

UNITED STATES PATENT OFFICE.

LOWELL MASON MAXHAM, OF BOSTON, MASSACHUSETTS.

THIRD RAIL.

SPECIFICATION forming part of Letters Patent No. 600,009, dated March 1, 1898.

Application filed June 7, 1897. Serial No. 639,636. (No model.)

To all whom it may concern:

Be it known that I, LOWELL MASON MAXHAM, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented a new and useful Third Rail, of which the following is a full, clear, and exact description.

This invention is in the line of electric conductors for railways in which the conductor being located upon the road-bed it is desired to insulate the same from all possible contact with the people or animals crossing the track. In accomplishing this result I have devised the construction shown in the drawings, forming part of this specification, and in which—

Figure 1 is a side elevation of the rail embodying my invention. Fig. 2 is a transverse section of the same made full size. Fig. 3 is a similar view of a modified form of the invention. Fig. 4 is a longitudinal section of ends of my rail. Fig. 5 is a similar view, and Fig. 6 are details of the invention.

The main portion of my invention comprises the rail-base A, which is preferably rolled into the form shown and consists of the central channel *a*, with nearly vertical sides, the slightly-sloping ledges *a'*, and the flanged lateral edges *a²*. These flanged edges are made to rest upon the level of the under side of the channel *a* in order to fit upon the sleepers supporting the other rails, and the flanges *a²* are provided to enable this third rail to be spiked to the same sleepers.

The object of the channel *a* is to receive the conducting-wire B, which is insulated from contact with the third rail by means of the glass blocks C, placed at suitable intervals within the channel *a* beneath the wire B.

The outer portion of each ledge *a'* is leveled for a short distance, as at *a''*, to receive the flat resilient plate D, secured thereto by means of suitable bolts E. Between the plate D and the ledges *a'* are inserted the sheets of insulating material F, by means of which said plate and the rail A are insulated the one from the other. While these sheets F may be located upon the two ledges *a'* and with their edges coincident with the edges of the ledges, I sometimes employ a single sheet extending the entire width of the rail, as shown in Fig. 3. In this case I dispense with the glass blocks C and depend for insulation of

the conductor B upon this same sheet F, which is depressed sufficiently within the channel *a* to retain said wire conductor in position.

To prevent the plate D from being forced with too great pressure upon the conductor B, the inner edges or shoulders *a³* of the ledges *a'* are lowered just enough to permit said plate to be pressed into electrical contact with the conductor B, while any excess of flexure is prevented by the support given to the plate by said shoulders. In other words, when the plate D is depressed slightly more than necessary for electrical contact with the conductor it rests solidly upon the shoulders *a³*.

The required pressure is applied to the resilient plate D in order to bend it into contact with the conductor by means of a trolley-wheel forcibly applied thereto from beneath the car to be propelled, and to retain the said wheel upon the central line of the plate D, I affix a rail G to the latter, held in place thereon by the bolts H. Said bolts may be supplied with the usual threaded nuts, if desired; but I prefer to employ cotter-pins I, as less liable to become unfastened. The lower ends of these bolts are adapted to contact with the conductor B and thereby complete the circuit between the same and the rail G when the said plate is depressed, as above described. I show an improved form of this contact-rail in Fig. 3. Here the steel plate D is shown as formed with a central rib G, represented as rolled integral therewith. This rib becomes itself the contact-rail and fits the groove of the trolley-wheel, as does the one first illustrated.

In addition to the insulating-sheets F the plate D is prevented from electrical contact with the rail-base A by means of the mica or other suitable material formed into washers and thimbles *e e'*.

This third rail A is formed in sections of suitable length secured to the sleepers of the road-bed by means of spikes J, engaging the flanges of the same and driven into the sleepers in the usual manner. The plate D being fastened to the rail-base by the bolts E, clamping the same together with the semiyielding insulating-sheets F between, there is no possible way for water to penetrate into the conductor-channel *a* except at the ends of each

rail-section. To make these ends also water-tight, I secure in each end two wedges K, filling most of the space between the plate D and rail-base A and held therein by bolts E'. The remainder of this space is filled by means of the two approximately crescent-shaped blocks or plugs L, which fit about the wire conductor B and are preferably made of rubber. By these means the ends of the third rails are caused to be water-tight, while at the same time electric insulation is insured between the rail-base and contact-plate D. In case the wedges K are formed of metal the sheets of insulating material E are prolonged to extend between the same and the rail-base. One other advantage obtained from the use of these wedges K lies in the fact that the extreme ends of the plates D are prevented thereby from being depressed when the trolley passes over them. Said ends are therefore of even height, and the trolley-wheel can pass from one to the other with the minimum of shock. Were these ends unsupported, the trolley-wheel would pass directly from a depressed plate to an undepressed one, and consequently would strike the latter with a pronounced blow. Of course for a limited distance at each side of such joint the contact-plate is not pressed into electrical communication with the conductor; but by the employment of two trolley-wheels held a short distance apart there need be no interruption to the flow of the current. As shown in Fig. 1, such two trolley-wheels T may be journaled in the ends of the levers V, pivoted to the under side of the car-body and to each other. Of course since every car-body is elastically supported and is in constant vertical oscillation these trolley-wheels must not be inflexibly joined thereto. This is accomplished by making the levers V suitably resilient or in any other well-known way; but inasmuch as I do not in this application lay claim to anything besides the construction of the third rail herein set forth I do not show more than a theoretically-possible arrangement of two trolley-wheels.

In Fig. 4 I have shown the plugs L as separated from each other in the neighboring ends of the rails A; but in Fig. 5 said plugs are continuous from one rail to the other. By this means the conductor B is wholly insulated between the said rail ends.

What I claim as my invention, and desire to secure by Letters Patent, is as follows, to wit:

1. In a third rail, the combination of the resilient, substantially flat, electroconductive plate, supports for the edges thereof, the sheet of insulating material having its edges subjacent to those of said electroconductive plate, means for securing said edges of plate and

sheet together, and an electroconductor located between said plate and sheet and close beneath the center line of said plate, substantially as and for the purpose set forth.

2. In an electroconductor, the rail-base having the central channel, α , and the inwardly-sloping ledges, α' , in combination with the conductor located in said channel and suitably insulated therefrom, the resilient and substantially flat plate secured to the raised outer edges of said rail-base and the insulating-sheets inserted between the same, said parts being so arranged that upon the application of suitable pressure to the central line of said plate, the latter is depressed into contact with said conductor and also into a condition of support by said ledges, substantially as and for the purpose set forth.

3. In a third rail, the combination of the resilient, substantially flat, electroconductive plate having fixed supports at its edges, and the electroconductor located close beneath the center line of said plate and normally insulated therefrom, whereby when a trolley passes along the center line of said plate, the latter is pressed into contact with said electroconductor and the current flows from said conductor to said plate, and from said plate to the trolley, for the purpose set forth.

4. In a third rail, the combination of the rail-base having the central channel, the electroconductor located therein, the resilient plate secured upon said rail-base and capable of being depressed along its central line, and supports for the extreme ends of said plate, whereby the same shall be supported at an invariable height, substantially as and for the purpose set forth.

5. In a third rail, the combination with the rail-base, the plate secured thereon and the electroconductor located within the same, of the elastic, non-conductive plugs surrounding said conductor at the juncture of the two rails and having an end of each held in the approximate ends of said rails, substantially as and for the purpose set forth.

6. In a third rail, the combination of the rail-base having central channel and inwardly-sloping ledges, the insulating-sheet, the electroconductor, the resilient plate, and the wedges and plugs closing the ends water-tight of the space between said rail-base and plate, as set forth.

In testimony that I claim the foregoing invention I have hereunto set my hand and seal this 5th day of June, in the year 1897.

LOWELL MASON MAXHAM. [L. S.]

Witnesses:

A. B. UPHAM,
 F. E. CALLER.